

Smallpox: What Physicians Need to Know

By Dr. Peter Kelly

Smallpox and vaccination against smallpox is all over the news. The federal government, fearing terrorists may have access to *variola*, asked the states to submit plans for vaccinating public health workers and selected hospital staff prior to the occurrence of a smallpox case.

Arizona has developed a plan and it is under review at the Centers for Disease Control and Prevention. This article will review some basic information regarding smallpox, vaccination to protect against smallpox, and Arizona's plan for vaccinating health care workers.

Smallpox: The Disease

Smallpox is a dreaded viral infection caused by *variola*. The organism is a large DNA orthopoxvirus that infects only humans and is spread by the respiratory route with prolonged, close, personal contact. After an incubation period of approximately 12 days an illness characterized by abrupt onset, fever and prostration begins. Within 3 to 4 days a rash appears signaling the blood borne spread of the virus to the skin and other organs. Vivid images of the rash and all the information than you can read are available on the CDC web site, www.cdc.gov.

The distribution and progression of the rash is diagnostic of smallpox.

Initially a few minute macules are seen usually on the face. Careful inspection at this time also shows some pharyngeal lesions. Over the next three weeks the rash progresses in a consecutive manner through papules, vesicles, pustules and eschars. The rash is distributed throughout the body but is most evident on the face and extremities (including the palms and soles) with relative sparing of the trunk. The skin lesions contain *variola* so care must be taken to avoid direct contact and to dispose of bedding and garments in a safe way.

Smallpox is a life threatening disease with a mortality rate of approximately 30% in a non-vaccinated population. Treatment of cases is supportive since there is currently no available anti-*variola* drug. Control of smallpox depends on prevention by isolation of cases and by vaccination of case contacts. Naturally occurring smallpox was eliminated in 1978 due to a World Health Organization case finding and vaccination program. There has not been a case of smallpox diagnosed since the world was declared smallpox free in 1980. *Variola* isolates are known to exist in laboratories in the United States and Russia. National security experts suspect that *variola* isolates may be in the hands of terrorists.

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Key Points

by Dr. Bob England, State Epidemiologist

- There is no smallpox on earth. Fears that certain rogue nations have access to the virus from stockpiles believed to exist in labs have led to development of vaccination plans.
- The vaccine has a high rate of uncomfortable side effects and has uncommon but significant risks. Therefore, as long as there are no smallpox cases or known real threat, we must err on the side of safety in our use of the vaccine.
- As horrible as the disease is, it is very controllable. There are reasons that it was eradicated 25 years ago, and these same reasons will allow it to be controlled now. These include:
 1. Transmission is primarily by droplet spread and is limited to face-to-face and household contacts. This allows people to be identified who may have been exposed around each case.
 2. The vaccine works even a few days after exposure to prevent disease, offering protection to persons even after they have been exposed.
 3. This is the only major infectious disease that gives a few days warning BEFORE it becomes contagious! During the prodromal phase, persons feel quite ill and everyone develops a fever, but shedding of virus doesn't begin until a few days later with the development of rash in

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Arizona
Department of
Health Services

Visit the ADHS Web site at www.hs.state.az.us

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Smallpox: The Vaccine

Vaccination against smallpox began in England in the final years of the 18th century. Edward Jenner, a rural physician, showed that inoculation of material from the skin lesion of a person with cowpox protected against smallpox infection. His technique spread quickly throughout England, Europe and North America. By the late 19th century vaccination was a common practice and cases of smallpox became less frequent.

The vaccine used in the United States in modern times is a live *vaccinia* virus. *Vaccinia* is an orthopoxvirus as is *variola* but the organisms are separate species. Immunity induced by vaccination with *vaccinia* is mediated by both B and T cells and full protection lasts for about 10 years. Immunization not only protects the individuals but also prevents transmission of disease. Once the world was smallpox free routine vaccination was discontinued. Thus, for practical purposes now the people of the United States are a non-immune population and re-introduction of *variola* would be a public health emergency.

Vaccination with live *vaccinia*, while generally safe, is not an innocuous procedure. The virus causes a local, usually self limited infection which can produce a vigorous inflammatory response. (See Fig. 1 for a normal vaccine site reaction.) One third of the persons recently vaccinated

developed symptoms such as fever, swollen upper arms and axillary adenopathy. More serious but very infrequent adverse effects include *vaccinia* encephalitis, progressive *vaccinia*, eczema vaccinatum, and generalized *vaccinia*. Altogether, these adverse events are expected to occur in ~ 1/1000 vaccinations. A full description and images of both local reactions and adverse effects can be found on the CDC web site. There are some principle contraindications to vaccination. See Table 1.

Arizona's Smallpox Plan

State and county public health officials have worked collaboratively over the past year to develop a coordinated response to a bioterrorism event such as a recurrence of smallpox. The Arizona Department of Health Services has submitted both pre- and post-event plans to CDC.

In accordance with federal guidance, Arizona's pre-event plan for smallpox calls for offering vaccination to public health system smallpox response teams who would investigate any suspect case and initiate an investigation. In addition, vaccination will be offered to health care smallpox teams in hospitals throughout the state where suspect cases of smallpox would be diagnosed and treated.

Vaccination is VOLUNTARY. No person is compelled to be vaccinated. Any person in either public health or hospital health care who has a contra-

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the mouth and throat. This allows identified contacts to be observed and if necessary, isolated, before they could infect anyone else.

- The Arizona post-event vaccination strategy is to quickly identify cases, find their contacts, vaccinate the contacts, watch the contacts and isolate them at the first sign of illness. To do this, a cadre of pre-vaccinated public health workers is needed to interview and intervene with cases, as well as a team of health care workers able to step in and care for the first case(s).

Importantly, this cadre of workers is NOT being vaccinated to protect them "just-in-case" they encounter a case of smallpox. Rather, these persons are being asked to voluntarily be prepared on an immediate basis to respond to known or suspected cases. Any health care workers who might incidentally be the first to come into contact with a case will be vaccinated after-the-fact, just as will all other contacts. Thus, we are not seeking to vaccinate large numbers of individuals in this first phase of our plan.

Dr. Bob England, State Epidemiologist

indication should not be vaccinated even if they volunteer. Vaccination of public health personnel and other key health care workers has not yet occurred in Arizona and will not begin before late January. The availability of vaccine and its use awaits Federal and state policy decisions.

Dr. Peter Kelly is an infectious disease specialist with the Department. He can be reached at 602.230.5860 or pkelly@hs.state.az.us.

Table 1

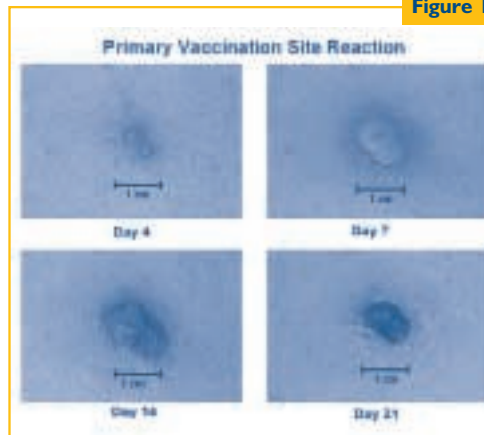
Principle Contra-indications to Smallpox Vaccination

Some people are at greater risk for serious side effects from the smallpox vaccine. Individuals who have any of the following conditions, or live with someone who does, should NOT get the smallpox vaccine unless they have been exposed to the smallpox virus:

- **Eczema or atopic dermatitis.** (This is true even if the condition is not currently active, mild or experienced as a child.)
- **Skin conditions such as burns, chickenpox, shingles, impetigo, herpes, severe acne, or psoriasis.** (People with any of these conditions should not get the vaccine until they have completely healed.)
- **Weakened immune system.** (Cancer treatment, an organ transplant, HIV, or medications to treat autoimmune disorders and other illnesses can weaken the immune system.)
- **Pregnancy or plans to become pregnant within one month of vaccination.**

Source: The Centers for Disease Control and Prevention

Figure 1



CDC Releases New Hand Hygiene Guidelines for Health Care Settings

by Clare Kioski



The new hand hygiene guidelines from the Centers for Disease Control and Prevention (CDC) for health care facilities recommend the use of alcohol-based hand rubs before and after each patient contact as the preferred method of hand decontamination in health care settings. Handwashing with soap and water is recommended when the workers' hands are visibly soiled. The rationale for these guidelines is to improve adherence by health care personnel to hand hygiene and thus reduce overall infection rates in health care facilities and more importantly the transmission of antimicrobial resistant organisms. These guidelines are for all healthcare facilities, not just hospitals and long term care facilities. The guidelines are not intended for use in food processing or food service establishments or for community settings.

Problems with adherence by health care providers to recommended hand washing have been reported in over 30 studies in the last 20 years. However, more recent data suggest that health care personnel may be more inclined to use alcohol-based hand rubs. These take less time and are more convenient to use, are more effective in reducing the number of bacteria on the hands than handwashing with soap and water and are less likely to cause skin irritation. An ICU nurse could possibly gain an extra hour in an eight-hour shift by using an alcohol-based hand rub.

The current recommendations are evidence-based and include:

- Handwashing with regular soap and water to remove unsightly debris;
- Using an alcohol based hand rub to reduce bacterial counts;
- And, using gloves in accordance with Standard Precautions when contact with blood/body fluids is anticipated.

Other recommendations include:

- Not wearing artificial nails or extenders when having direct contact with patients at high risk of acquiring infections.
- Providing healthcare workers with hand lotions and creams to minimize the occurrence of irritant contact dermatitis associated with hand antisepsis or handwashing.
- Decontaminating the hands after contact with a patient's intact skin (e.g., when taking a pulse or blood pressure, lifting a patient).

Alcohol has been used as an antiseptic for 60-70 years and there is no evidence that bacteria are becoming more resistant to alcohol.

The guidelines can be found at the CDC's website at: www.cdc.gov/mmwr/PDF/rr/rr5116.pdf. For a two-page summary of the recommendations, contact Clare Kioski at the number below.

Clare Kioski is an epidemiologist and the antimicrobial surveillance and prevention coordinator for the Department. She can be reached at 602.230.5927 or ckioski@hs.state.az.us.

Source: CDC. Guideline for Hand Hygiene in Health-Care Settings: Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. MMWR 2002;51(No. RR-16):1-56.

Noteworthy...

ADHS Reports First Flu Cases of the Season

At the time of this writing, Arizona has its first seven lab-confirmed flu cases of the 2002-2003 season.

Four of these culture-confirmed cases were typed as influenza B, and three as influenza A. One of each has been subtyped and both are strains that are covered by this year's vaccine. Subtyping of the others is pending.

Influenza vaccine remains available throughout Arizona. For information regarding influenza vaccination sites, please contact the Flu Shot Hotline, Community Information and Referral, 602.263.8856 in Maricopa County, 1.800.352.3792 outside of Maricopa County, website address <http://www.cirs.org/seasonal-flu.html>. For national influenza information, please visit the Centers for Disease Control and Prevention's influenza website at: <http://www.cdc.gov/ncidod/diseases/flu/fluvirus.htm>. For further information regarding influenza in Arizona, please contact the Arizona Department of Health Services' Infectious Disease Epidemiology Section at 602.230.5932, and the Arizona Immunization Program Office at 602.230.5852.

MMR vaccine and autism

In the past few years there have been some reports suggesting an association between the measles, mumps and rubella (MMR) vaccine and autism. Most of the evidence suggestive of a link has been based on case-series, cross-sectional studies and ecologic studies. Many larger studies and reviews of data have failed to detect any association. Most recently, however, a population-based study conducted in Denmark provided strong evidence against the hypothesis that MMR vaccination causes autism. (N Engl J Med 2002; 347:1477-82).



Rarity, Complexity Confound *Naegleria fowleri* Meningitis Cases

By Dr. Bob England

This is a tale of a very rare disease and a possibly unprecedented source of infection that is told with a lot of uncertainty.

In October, two nearly simultaneous cases of meningitis due to *Naegleria fowleri* occurred in 5 year-old children living in the northwest metro Phoenix area. This type of amoebic meningitis is extremely rare (less than 200 known cases worldwide, ever) and is nearly always fatal, as it was in both of these tragic cases. A thorough investigation was begun by the Maricopa County Department of Public Health (MCDPH), with assistance from the Maricopa County Environmental Services Department (MCESD), from ADHS and from the Centers for Disease Control and Prevention (CDC).

The Perplexing Parasite

Naegleria fowleri is a widespread environmental parasitic amoeba that only rarely infects humans, virtually always those who swim in unchlorinated natural bodies of fresh water, such as stagnant ponds or swimming holes. In humans, when water containing the amoeba enters the nose, the amoeba can pass through the nasal mucosa, up the olfactory nerve, directly penetrate the brain and cause meningoencephalitis. It is very rarely infectious, however, as demonstrated by the fact that even when individuals have been infected by swimming in such water, tens of thousands of others may have swum in the same water without ill effect.

It is a difficult organism to culture from environmental samples, requiring lengthy and labor-intensive techniques that seem to require as much art as science, with the potential for both false-negative and false-positive results (the latter due to cross-reaction with other amoeba during some confirmatory testing techniques). The CDC remains the best provider of reliable confirmation of the presence of the organism.

Once before in recorded history, in Australia during the 1970s, a community water supply was implicated in causing human infections with *Naegleria fowleri*. In this instance, the water source was surface water, which would be expected to harbor the organism, yet was delivered unchlorinated. When routine chlorination was instituted, human cases stopped.

Particular test results have conflicted between private and public health labs, and testing continues, but at least some tests from locations in the water distribution system have revealed the presence of *Naegleria fowleri*.

In our investigation, to our surprise, there was no history of exposure to natural bodies of fresh water in either child. The only link of any sort that could be established between these children was that they both were consumers of unchlorinated water supplied by the same water company. Unlike the situation in Australia, however, the water source was groundwater, which is not always required to be chlorinated per existing regulations (see inset for drinking water facts).

Although we did not initially expect to find this organism in water distributed from a groundwater source, chlorination of the water system was begun due to positive coliform test results. Based on the history in Australia, this would have been sufficient to prevent further infection with the amoeba even if it were present. The community that had been receiving this water was nevertheless understandably distressed. They had lost two children and we could not provide them with answers as to why it happened.

Unanswered Questions Remain

Particular test results have conflicted between private and public health labs, and testing continues, but at least some tests from locations in the water distribution system have revealed the presence of *Naegleria fowleri*. Based on initial results, the water system was taken offline for thorough cleaning and installation of a modern chlorination system.

Still, questions remain. How were the children infected? Certainly children submerge their faces in tap water and might get water up their noses during bathing or other activities, and this was the case for these two children, but would the concentration of this amoeba in tap water have been enough to expect two children to get infected this way? After all, many thousands of persons swim and submerge their faces in natural bodies of fresh water, which one would expect to have much higher concentrations of the organism, without becoming ill.

Could the groundwater itself contain the organism? At least initially, we were laboring under the assumption that deep well water was relatively pristine. If not from the groundwater, how could a break in a line or other problem result in enough contamination to infect two people with this relatively poorly infectious organism, without overwhelming evidence of other contamination?

Does it even mean anything that we've found the organism in this water system? After all, we also found it in another system's well-head that we were using as a "control" (a system that has long been chlorinated already so presents no risk). Does this mean that the organism is frequently present in other water systems? If so, how much is

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too much for a water system? If it is widespread, does that imply that we must chlorinate more frequently?

Chlorination Assures Safety

Since the amoeba in question is a parasite that requires the presence of other bacteria to multiply, total and fecal coliform testing can be used as a general screen for contamination. If there is no bacterial contamination, presumably the amoeba cannot be present to any significant degree. We have urged private water companies and labs to continue to rely on this testing, and to test more frequently than required if there is any concern.

Federal, state and local agencies have been working to develop the sort of long-term research studies that would answer some of these questions. In the meantime, based on the information gained from the outbreak in Australia, we know that the people being served by the original water system in question are safe, because they are now receiving chlorinated water. There is no reason to believe that any other water systems are not safe, because they are either chlorinated or have adequate negative coliform tests. And we will support the sort of long-term studies needed to determine whether there is anything else that can be done to make this extraordinarily rare disease even more rare. The bottom line, however, is that we may never understand exactly how this happened.

Dr. Bob England is the State Epidemiologist for the Department and can be reached at 602.230.5823 or benglan@hs.state.az.us.

Drinking Water Regulations

- The federal Safe Drinking Water Act regulates Arizona's public drinking water supply. The law covers all water systems that serve more than 25 people. It does not cover private wells. The EPA sets the health-based standards that must be met by water systems.
- Drinking water that comes from surface water sources must be properly treated and chlorinated before it is delivered. Drinking water from groundwater sources does not need to be chlorinated if bacterial sampling demonstrates that the well is free of harmful bacteria. Well water that contains coliform bacteria must be chlorinated before delivery.
- Water suppliers are required to prepare annual reports for their customers. The reports include information on detected contaminants, possible health effects, and the water's source. Patients who ask about their water quality can be referred to their water system operator, who must provide them with an annual report.
- Approximately 95% of Arizona residents receive water from regulated drinking water systems. Patients with private wells should test their well water annually for the presence of coliform bacteria and nitrates. Private well owners should also test at least once for metals and organic contaminants. The ADHS Office of Environmental Health can help interpret your patient's private well sampling results at 1.800.367.6412.



Arizona's Teen Pregnancy Rate Continues To Decline

Arizona's teen pregnancy rate continued its downward trend in 2001, dropping nine percent from the previous year and 29 percent from the decade's high point in 1994, according to new data released by the Arizona Department of Health Services.

The latest data provide encouraging news to those behind Arizona's "abstinence until marriage" campaign.

"Young people are getting the message about acting responsibly," said Catherine Eden, Director of the Arizona Department of Health Services. "This trend is not only making a positive impact on teens, but it's also improving the overall health of our state."

The pregnancy rate for teenagers 15 to 19 years old in 2001 was 72 pregnancies per 1,000 females, nine percent lower than in 2000 and 29.4

percent lower than in 1994 when it reached the decade's peak of 102 pregnancies per 1,000 girls.

The pregnancy rate for older teenagers (18 and 19) reached a record low in 2001, down 8.4 percent from the previous year, while the pregnancy rate for teens age 15 to 17 declined even more steeply in 2001, dropping 10 percent from 2000 and 34 percent from 1994.

Eden cautioned that there is still much more work to be done, noting that 21 percent of teenagers who already had one child gave birth to another child in 2001.

Arizona launched an aggressive effort four years ago to reduce the state's teen pregnancy through a program that combines an educational component and a public awareness campaign. The current ad campaign encourages teens to think about the

dangers of sexually transmitted diseases, while a Web site (www.sexcanwait.com) provides an interactive resource for Arizona youth.

The continuing reduction in Arizona's birth rate mirrors a national trend and suggests that teens are less inclined to engage in casual sex, and more likely to give serious thought to the benefits of abstinence until marriage. Other factors could include increased awareness of sexually transmitted diseases and an increased use of contraceptives.

The data are contained in the newly published Teenage Pregnancy, Arizona, 1991-2001, produced by the Arizona Department of Health Services' Bureau of Public Health Statistics.

The full report is available on the Web at www.hs.state.az.us/plan/tp.htm.

Violence Related Childhood Deaths Increase Dramatically in 2001

by Robert Schackner

Violence-related childhood deaths in Arizona increased by 58 percent in 2001 according to the annual report of the Arizona Child Fatality Review Team. Seventy-six children died from homicide, suicide and child abuse in 2001 compared to 48 in 2000.

Preventable Childhood Deaths

In 2001, there were 1,051 fatalities that occurred in Arizona among infants and children under age 18. The Arizona Child Fatality Review Team reviewed 969 of these fatalities and determined that a total of 247 fatalities, or nearly 26 percent of all childhood deaths, could have been prevented through such preventive practices as the use of automobile seat belts, locked storage of guns, and secured pool fences. Of special note, approximately 50% of the deaths of children aged one through 17 could have been prevented [Figure 1].

Leading Categories of Preventable Deaths

Motor vehicle accidents remained the leading cause of preventable deaths for children in 2001. Approximately 40 percent of all childhood preventable deaths were due to motor vehicle accidents.

Unintentional injuries were the second leading cause of preventable deaths, followed by deaths related to violence, medical conditions, and SIDS risk factors [Figure 2]. Within the category of unintentional injuries, drowning was the most frequent, accounting for 35 preventable deaths followed by 18 deaths from suffocation/choking, 12 from smoke inhalation/burns, 5 from gun shot wounds, 5 from falls and head injury, 4 from poisoning, and one death each from exposure, lacerations and electrocution. Thirteen of these deaths were the result of residential fires.

Report Recommendations

The report includes recommendations for elected officials, other policy

makers, and the public. Because of the increased numbers of childhood death from violence, recommendations include: enacting laws requiring all guns sold in Arizona to have a locking device and enforcing the existing state law prohibiting persons under age 18 from possessing a firearm; ensuring funding for adequate behavioral health services; and supporting gang prevention initiatives and conflict resolution training for youth.

Links to the 2002 and 2001 Child Fatality Review Team Report and information describing the Arizona Child Fatality Review Program and may be found on the Internet at: <http://www.hs.state.az.us/cfhs/azcf/index.htm>

For additional information, contact Robert Schackner, Director, Child Fatality Review Program at (602) 542-1875 or rschack@hs.state.az.us.

Figure 1

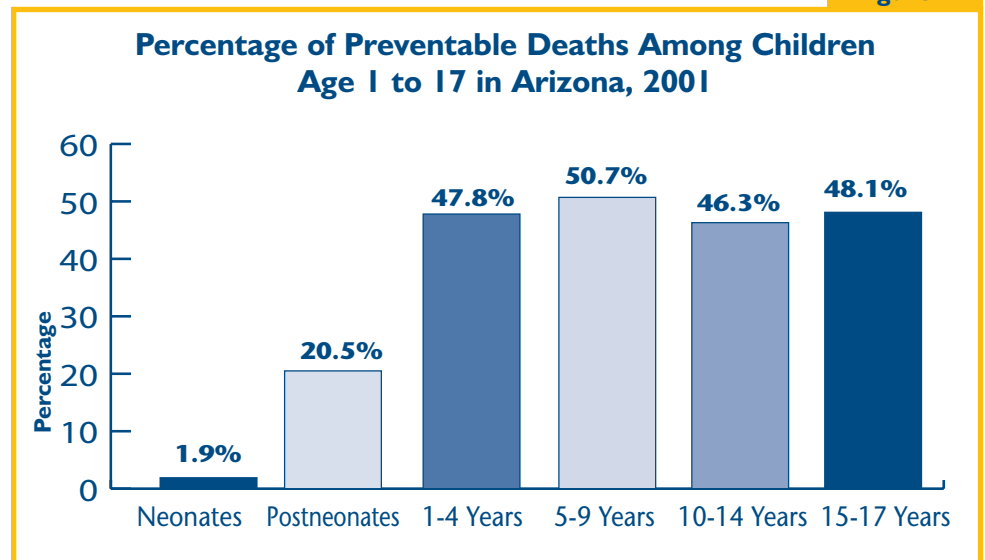
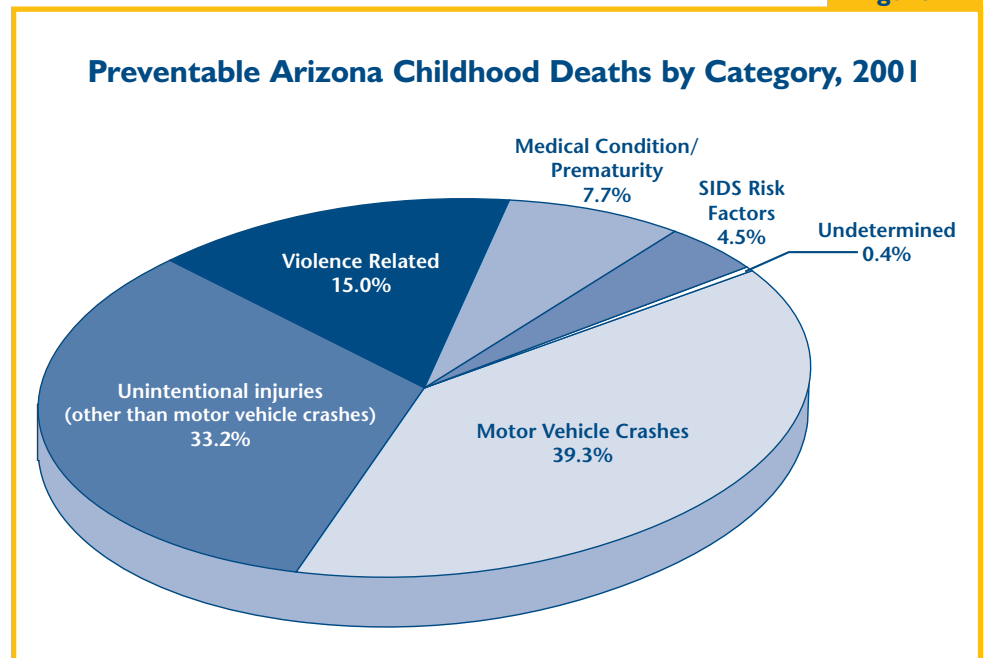


Figure 2



SUMMARY OF SELECTED REPORTABLE DISEASES

Year to Date (January - November, 2002)¹

	Jan - Nov 2002	Jan - Nov 2001	5 Year Median Jan - Nov
VACCINE PREVENTABLE DISEASES:			
<i>Haemophilus influenzae</i> , serotype b invasive disease (<5 years of age)	5 (3)	9 (5)	6 (3)
Measles	0	1	1
Mumps	1	2	5
Pertussis (<12 years of age)	179 (88)	370 (157)	73 (41)
Rubella (Congenital Rubella Syndrome)	0 (0)	0 (0)	1 (0)
FOODBORNE DISEASES:			
Campylobacteriosis	586	584	542
<i>E.coli</i> O157:H7	35	30	37
Listeriosis	14	9	15
Salmonellosis	534	628	742
Shigellosis	357	399	553
VIRAL HEPATITIDES:			
Hepatitis A	272	376	659
Hepatitis B	204	143	169
Hepatitis B: non-acute ²	960	1386	*
Hepatitis C	3	9	19
Hepatitis C: non-acute ²	4207	3180	*
INVASIVE DISEASES:			
<i>Streptococcus pneumoniae</i>	681	708	589
<i>Streptococcus</i> Group A	260	162	167
<i>Streptococcus</i> Group B in infants <30 days of age	29	49	38
Meningococcal Infection	31	18	41
SEXUALLY TRANSMITTED DISEASES:			
Chlamydia	13613	13383	11392
Gonorrhea	3401	3636	3802
P/S Syphilis (Congenital Syphilis)	172 (14)	158 (30)	175 (26)
DRUG-RESISTANT BACTERIA:			
TB isolates resistant to at least INH (resistant to at least INH & Rifampin)	9 (0)	10 (3)	10 (1)
Vancomycin resistant <i>Enterococci</i> isolates	869	661	690
VECTOR-BORNE & ZOONOTIC DISEASES:			
Hantavirus Pulmonary Syndrome	1	1	3
Plague	0	0	1
Animals with Rabies	135	128	78
ALSO OF INTEREST IN ARIZONA:			
Coccidioidomycosis	2490	1773	1566
Tuberculosis	205	209	197
HIV	479	483	483
AIDS	469	518	389
Lead Poisoning (<16 years of age)	226 (156)	178 (154)	321 (184)
Pesticide Poisoning ³	14	13	13

¹ Data are provisional and reflect case reports during this period except Lead Poisoning which is by date of diagnosis.

² These counts reflect the year reported or tested and not the date infected.

* Case counts for non-acute Hepatitis B and C are not available before 1998.

³ Not all reports will be confirmed as meeting the case definition for pesticide poisoning upon further investigation.



Arizona Department of Health Services

Public Information Office

1740 West Adams

Phoenix, AZ 85007

602.364.1201 • Fax 602.364.0844

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Managing Editor: Courtney Casillas

e-mail: ccasill@hs.state.az.usContributors: Bob England, Will Humble, Peter Kelly,
Emma Viera Negron, Robert Schackner

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FBI lauds Arizona's Public Health Response to Anthrax

The Federal Bureau of Investigation recently praised Governor Jane Dee Hull and the Arizona Department of Health Services for the state's cooperation and rapid response during last year's anthrax scare.

"During the anthrax scare, the Arizona State Health Laboratory proved to be a full and essential partner in the war on terrorism. The protocols developed by the lab, in cooperation with the FBI's Phoenix office, today serve as a model for jurisdictions across the country," said Special Agent In Charge Charlene B. Thornton, head of the Phoenix office of the FBI.

During the 2001 anthrax scare, employees at the Department's Arizona State Health Laboratory worked around the clock for weeks, testing more than 1,100 samples submitted by the FBI and other law enforcement agencies. All of the samples were negative for anthrax.

In a December ceremony at the Governor's Office in Phoenix, Special Agent In Charge Charlene B. Thornton presented a special agency award to Governor Hull and Arizona Department of Health Services Director Catherine R. Eden. She also presented individual awards to Wesley Press, Arizona State Health Laboratory Bureau Chief; William Slanta, Assistant Bureau Chief; Powell Gammill, State Lab Section Manager of Epidemic Detection; Elisabeth Lawaczek, Disease Specialist; and David Engelthaler, head of the ADHS Office of Bioterrorism and Epidemic Preparedness.

The awards cited the ADHS employees' "outstanding assistance to the FBI in connection with its investigative efforts."

"Your cooperation was of immeasurable help to our representatives," the award, signed by FBI Director Robert S. Mueller III, states. "I share their gratitude for your sup-

port, which assisted them in carrying out their responsibilities. You can take pride in the role you played in the success achieved, and my associates and I congratulate you on a job well done."

ADHS Director Eden said, "I am proud that the FBI has cited Arizona as a national model for cooperation and response during this difficult time."

CORRECTION

The contact information for the Valley Fever Center for Excellence at the University of Arizona was printed incorrectly in the November/December issue of Prevention Bulletin. The Center can be contacted at 520.629.4777 or www.arl.arizona.edu/vfce.